GWT - USING UIBINDER

Introduction

- The UiBinder is a framework designed to separate Functionality and View of User Interface.
- The UiBinder framework allows developers to build gwt applications as HTML pages with GWT widgets configured throughout them.
- The UiBinder framework makes easier collaboration with UI designers who are more comfortable with XML, HTML and CSS than Java source code
- The UIBinder provides a declarative way of defining User Interface.
- The UIBinder seperates the programmic logic from UI.
- The UIBinder is similar to what JSP is to Servlets.

UiBinder workflow

Step 1: Create UI Declaration XML File

Create a XML/HTML based User Interface declaration file. We've created a **Login.ui.xml** file in our example.

```
<ui:UiBinder xmlns:ui='urn:ui:com.google.gwt.uibinder'
   xmlns:gwt='urn:import:com.google.gwt.user.client.ui'
   xmlns:res='urn:with:com.tutorialspoint.client.LoginResources'>
   <ui:with type="com.tutorialspoint.client.LoginResources" field="res">
   </ui:with>
   <gwt:HTMLPanel>
   ...
   </gwt:HTMLPanel>
</ui:UiBinder>
```

Step 2: Use ui:field for Later Binding

Use ui:field attribute in XML/HTML element to relate UI field in XML with UI field in JAVA file for later binding.

```
<gwt:Label ui:field="completionLabel1" />
<gwt:Label ui:field="completionLabel2" />
```

Step 3: Create Java counterpart of UI XML

Create Java based counterpart of XML based layout by extending Composite widget. We've created a **Login.java** file in our example.

```
package com.tutorialspoint.client;
...
public class Login extends Composite {
...
}
```

Step 4: Bind Java UI fields with UiField annotation

use @UiField annotation in **Login.java** to designate counterpart class members to bind to XML-based fields in

Login.ui.xml

```
public class Login extends Composite {
   ...
   @UiField
   Label completionLabel1;

   @UiField
   Label completionLabel2;
   ...
}
```

Step 5: Bind Java UI with UI XML with UiTemplate annotation

Instruct GWT to bind java based component **Login.java** and XML based layout **Login.ui.xml** using @UiTemplate annotation

```
public class Login extends Composite {

   private static LoginUiBinder uiBinder = GWT.create(LoginUiBinder.class);

   /*
   * @UiTemplate is not mandatory but allows multiple XML templates
   * to be used for the same widget.
   * Default file loaded will be <class-name>.ui.xml
   */
   @UiTemplate("Login.ui.xml")
   interface LoginUiBinder extends UiBinder<Widget, Login> {
   }
   ...
}
```

Step 6: Create CSS File

Create an external CSS file**Login.css** and Java based Resource **LoginResources.java** file equivalent to css styles

```
.blackText {
   font-family: Arial, Sans-serif;
   color: #000000;
   font-size: 11px;
   text-align: left;
}
...
```

Step 7: Create Java based Resource File for CSS File

```
package com.tutorialspoint.client;
...
public interface LoginResources extends ClientBundle {
   public interface MyCss extends CssResource {
      String blackText();

      ...
   }

   @Source("Login.css")
   MyCss style();
}
```

Step 8: Attach CSS resource in Java UI Code file.

Attach an external CSS file**Login.css** using Contructor of Java based widget class **Login.java**

```
public Login() {
   this.res = GWT.create(LoginResources.class);
   res.style().ensureInjected();
   initWidget(uiBinder.createAndBindUi(this));
}
```

UIBinder Complete Example

This example will take you through simple steps to show usage of a UIBinder in GWT. Follow the following steps to update the GWT application we created in *GWT - Create Application* chapter:

Step	Description
1	Create a project with a name *HelloWorld* under a package *com.tutorialspoint* as explained in the *GWT - Create Application* chapter.
2	Modify *HelloWorld.gwt.xml*, *HelloWorld.css*, *HelloWorld.html* and *HelloWorld.java* as explained below. Keep rest of the files unchanged.
3	Compile and run the application to verify the result of the implemented logic.

Following is the content of the modified module descriptor **src/com.tutorialspoint/HelloWorld.gwt.xml**.

```
<?xml version="1.0" encoding="UTF-8"?>
<module rename-to='helloworld'>
  <!-- Inherit the core Web Toolkit stuff.                        -->
  <inherits name='com.google.gwt.user.User'/>

  <!-- Inherit the default GWT style sheet.                       -->
  <inherits name='com.google.gwt.user.theme.clean.Clean'/>
  <!-- Inherit the UiBinder module.                               -->
  <inherits name="com.google.gwt.uibinder.UiBinder"/>
  <!-- Specify the app entry point class.                         -->
  <entry-point class='com.tutorialspoint.client.HelloWorld'/>

  <!-- Specify the paths for translatable code                    -->
  <source path='client'/>
  <source path='shared'/>

</module>
```

Following is the content of the modified Style Sheet file **war/HelloWorld.css**.

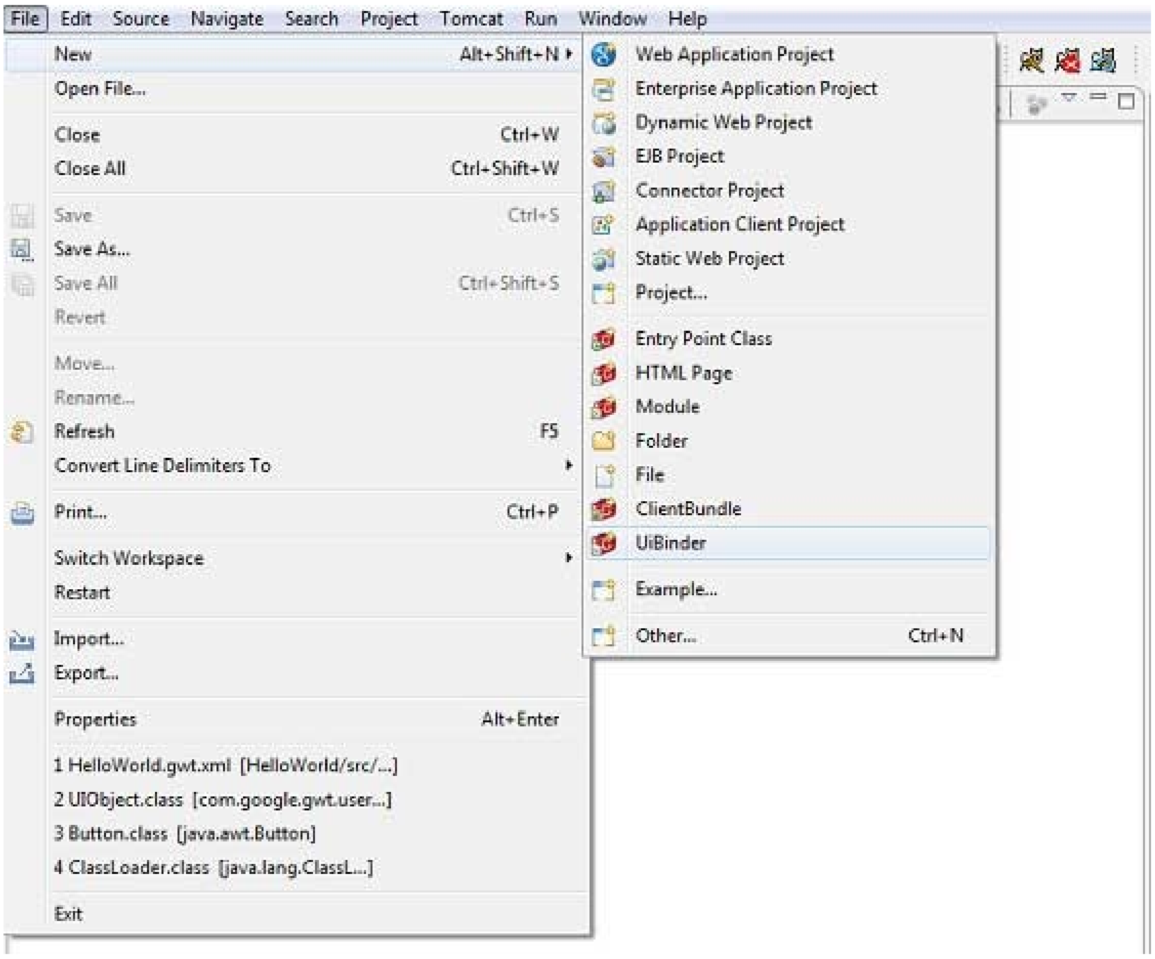
```
body{
   text-align: center;
   font-family: verdana, sans-serif;
}
h1{
   font-size: 2em;
   font-weight: bold;
   color: #777777;
   margin: 40px 0px 70px;
   text-align: center;
}
```

Following is the content of the modified HTML host file **war/HelloWorld.html**.

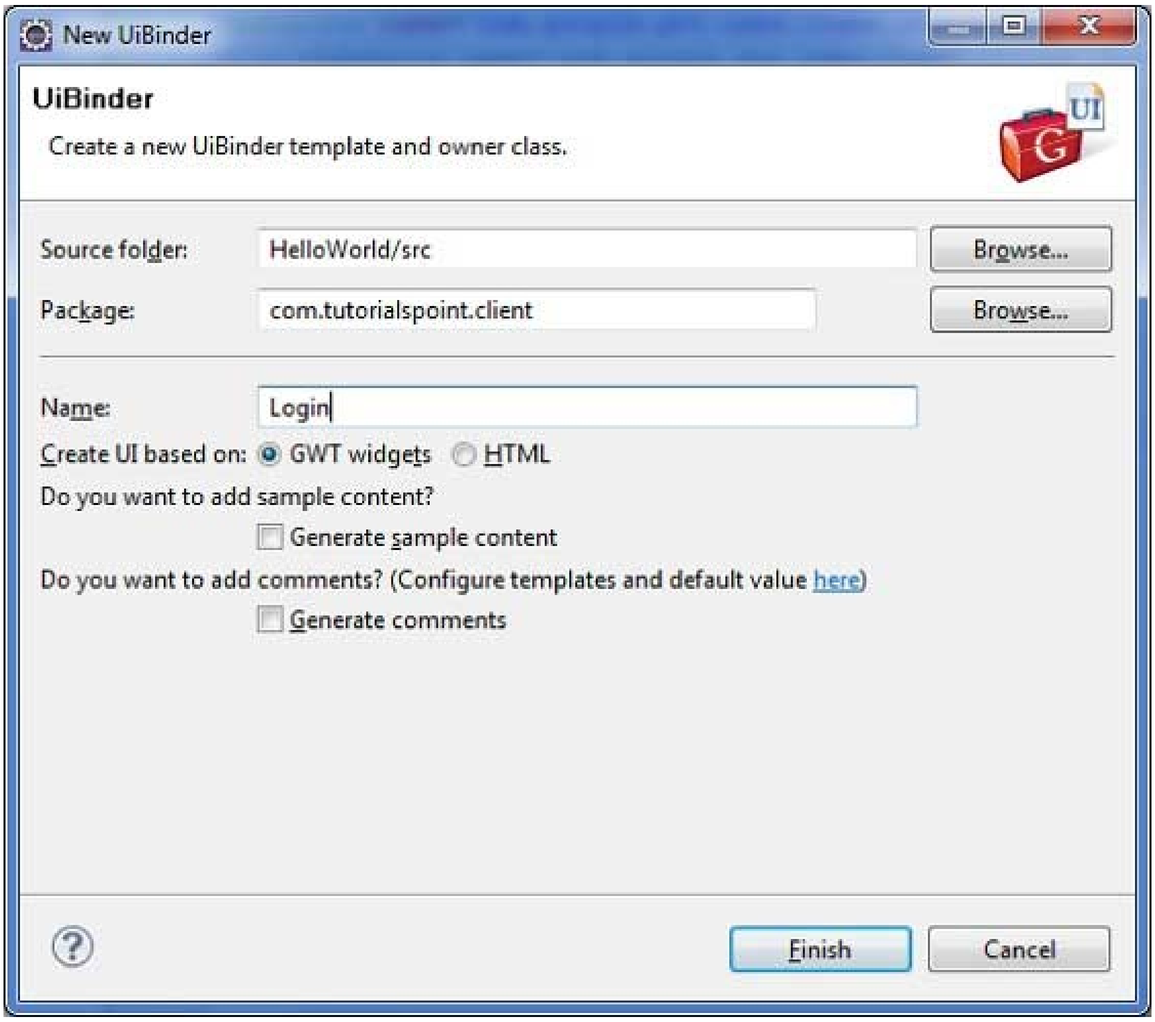
```
<html>
<head>
<title>Hello World</title>
   <link rel="stylesheet" href="HelloWorld.css"/>
   <script language="javascript" src="helloworld/helloworld.nocache.js">
```

```
    </script>
</head>
<body>

<h1>UiBinder Demonstration</h1>
<div ></div>

</body>
</html>
```

Now create a new UiBinder template and owner class (File -> New -> UiBinder).



Choose the client package for the project and then name it Login. Leave all of the other defaults.Click Finish button and the plugin will create a new UiBinder template and owner class.



UiBinder

Create a new UiBinder template and owner class.

Source folder: HelloWorld/src

Package: com.tutorialspoint.client

Name: Login

Create UI based on: [✓ GWT widgets] HTML

Do you want to add sample content?

Generate sample content

Do you want to add comments? (Configure templates and default value here)

Generate comments

Now create Login.css file in the **src/com.tutorialspoint/client** package and place the following contents in it

```
.blackText {
   font-family: Arial, Sans-serif;
   color: #000000;
   font-size: 11px;
   text-align: left;
}

.redText {
   font-family: Arial, Sans-serif;
   color: #ff0000;
   font-size: 11px;
   text-align: left;
}

.loginButton {
   border: 1px solid #3399DD;
   color: #FFFFFF;
   background: #555555;
   font-size: 11px;
   font-weight: bold;
   margin: 0 5px 0 0;
   padding: 4px 10px 5px;
   text-shadow: 0 -1px 0 #3399DD;
}

.box {
   border: 1px solid #AACCEE;
   display: block;
   font-size: 12px;
   margin: 0 0 5px;
   padding: 3px;
   width: 203px;
}

.background {
   background-color: #999999;
   border: 1px none transparent;
   color: #000000;
   font-size: 11px;
   margin-left: -8px;
   margin-top: 5px;
   padding: 6px;
}
```

Now create LoginResources.java file in the **src/com.tutorialspoint/client** package and place the following contents in it

```
package com.tutorialspoint.client;

import com.google.gwt.resources.client.ClientBundle;
import com.google.gwt.resources.client.CssResource;

public interface LoginResources extends ClientBundle {
   /**
   * Sample CssResource.
   */
   public interface MyCss extends CssResource {
      String blackText();

      String redText();

      String loginButton();

      String box();

      String background();
   }

   @Source("Login.css")
   MyCss style();
}
```

Replace the contents of Login.ui.xml in **src/com.tutorialspoint/client** package with the following

```
<ui:UiBinder xmlns:ui='urn:ui:com.google.gwt.uibinder'
   xmlns:gwt='urn:import:com.google.gwt.user.client.ui'
   xmlns:res='urn:with:com.tutorialspoint.client.LoginResources'>
   <ui:with type="com.tutorialspoint.client.LoginResources" field="res">
   </ui:with>
   <gwt:HTMLPanel>
      <div align="center">
         <gwt:VerticalPanel res:styleName="style.background">
            <gwt:Label text="Login" res:styleName="style.blackText" />
            <gwt:TextBox ui:field="loginBox" res:styleName="style.box" />
            <gwt:Label text="Password" res:styleName="style.blackText" />
            <gwt:PasswordTextBox ui:field="passwordBox"
            res:styleName="style.box" />
            <gwt:HorizontalPanel verticalAlignment="middle">
               <gwt:Button ui:field="buttonSubmit" text="Submit"
               res:styleName="style.loginButton" />
               <gwt:CheckBox ui:field="myCheckBox" />
               <gwt:Label ui:field="myLabel" text="Remember me"
               res:styleName="style.blackText" />
            </gwt:HorizontalPanel>
            <gwt:Label ui:field="completionLabel1"
            res:styleName="style.blackText" />
            <gwt:Label ui:field="completionLabel2"
            res:styleName="style.blackText" />
         </gwt:VerticalPanel>
      </div>
   </gwt:HTMLPanel>
</ui:UiBinder>
```

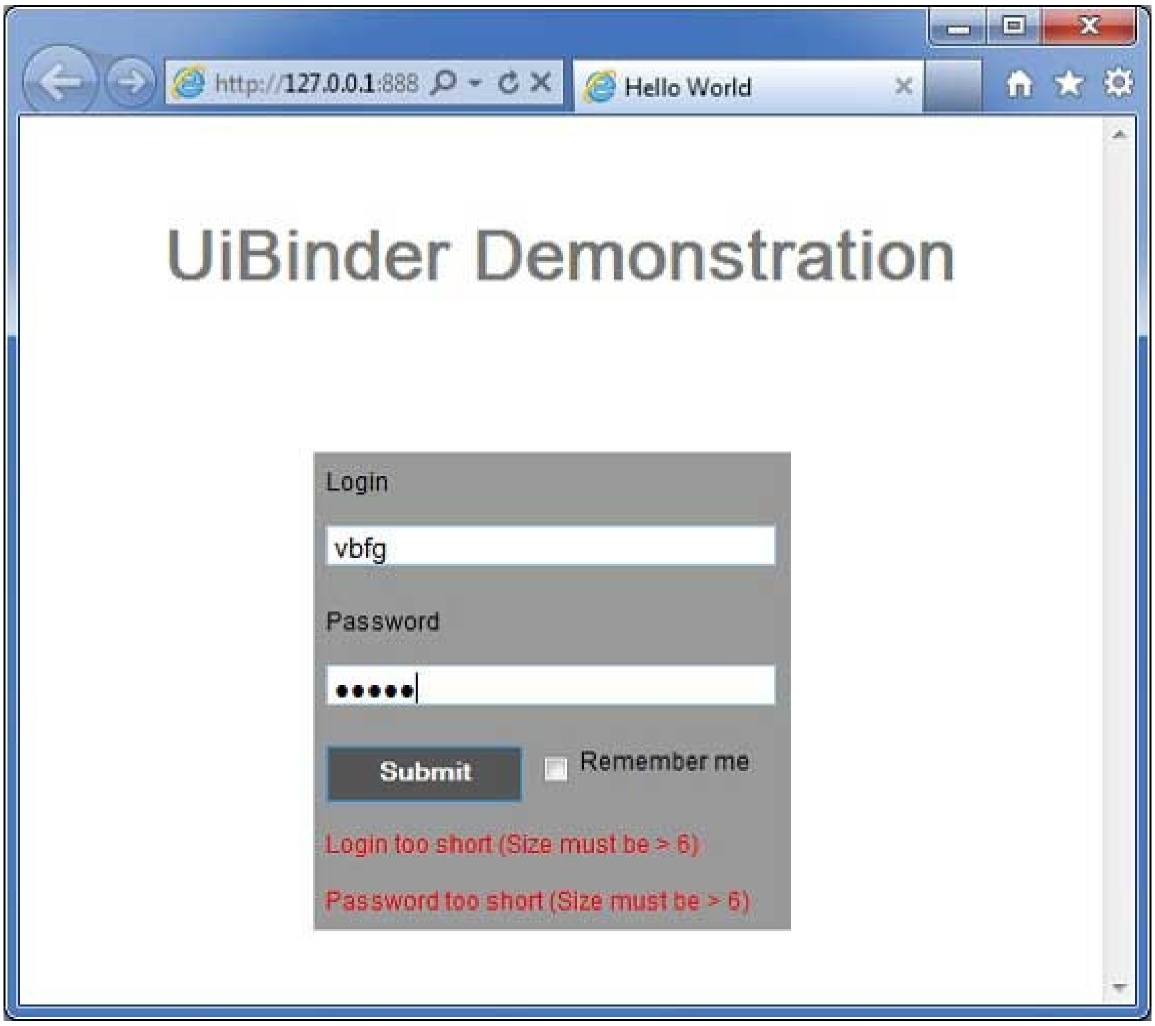
Replace the contents of Login.java in **src/com.tutorialspoint/client** package with the following

```
package com.tutorialspoint.client;

import com.google.gwt.core.client.GWT;
import com.google.gwt.event.dom.client.ClickEvent;
import com.google.gwt.event.logical.shared.ValueChangeEvent;
import com.google.gwt.uibinder.client.UiBinder;
import com.google.gwt.uibinder.client.UiField;
import com.google.gwt.uibinder.client.UiHandler;
import com.google.gwt.uibinder.client.UiTemplate;
import com.google.gwt.user.client.Window;
import com.google.gwt.user.client.ui.Composite;
import com.google.gwt.user.client.ui.Label;
import com.google.gwt.user.client.ui.TextBox;
import com.google.gwt.user.client.ui.Widget;

public class Login extends Composite {

   private static LoginUiBinder uiBinder = GWT.create(LoginUiBinder.class);

   /*
   * @UiTemplate is not mandatory but allows multiple XML templates
   * to be used for the same widget.
   * Default file loaded will be <class-name>.ui.xml
   */
   @UiTemplate("Login.ui.xml")
   interface LoginUiBinder extends UiBinder<Widget, Login> {
   }

   @UiField(provided = true)
   final LoginResources res;

   public Login() {
      this.res = GWT.create(LoginResources.class);
      res.style().ensureInjected();
      initWidget(uiBinder.createAndBindUi(this));
   }

   @UiField
   TextBox loginBox;

   @UiField
   TextBox passwordBox;

   @UiField
   Label completionLabel1;

   @UiField
   Label completionLabel2;

   private Boolean tooShort = false;

   /*
   * Method name is not relevant, the binding is done according to the class
   * of the parameter.
   */
   @UiHandler("buttonSubmit")
   void doClickSubmit(ClickEvent event) {
      if (tooShort) {
         Window.alert("Login Successful!");
      } else {
         Window.alert("Login or Password is too short!");
      }
   }

   @UiHandler("loginBox")
   void handleLoginChange(ValueChangeEvent<String> event) {
      if (event.getValue().length() < 6) {
         completionLabel1.setText("Login too short (Size must be > 6)");
         tooShort = true;
      } else {
         tooShort = false;
         completionLabel1.setText("");
      }
   }

   @UiHandler("passwordBox")
   void handlePasswordChange(ValueChangeEvent<String> event) {
      if (event.getValue().length() < 6) {
         tooShort = true;
         completionLabel2.setText("Password too short (Size must be > 6)");
      } else {
         tooShort = false;
         completionLabel2.setText("");
      }
   }
}
```

Let us have following content of Java file **src/com.tutorialspoint/HelloWorld.java** which will demonstrate use of UiBinder.

```
package com.tutorialspoint.client;

import com.google.gwt.core.client.EntryPoint;
import com.google.gwt.user.client.ui.RootPanel;

public class HelloWorld implements EntryPoint {
   public void onModuleLoad() {
      RootPanel.get().add(new Login());
   }
}
```

Once you are ready with all the changes done, let us compile and run the application in development mode as we did in GWT - Create Application chapter. If everything is fine with your application, this will produce following result:



UiBinder Demonstration

Login

vbfg

Password

•••••

Submit

Remember me

Login too short (Size must be > 6)

Password too short (Size must be > 6)